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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/383,331	08/26/1999	AMMAR DERRAA	100.718.422	6442

7590 10/29/2003

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EXAMINER	
RAMSEY, KENNETH J	
ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 10/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/383,331	DERRAA, AMMAR	
	Examiner	Art Unit	
	Kenneth J. Ramsey	2879	

-- The MAILING DATE of this communication appears on th cover sheet with the correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *10-16 and 25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,17-24 and 26-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

The amendment dated 9/12/2003 has been entered

Election/Restrictions

This application contains claim10-16 and 25 drawn to an invention nonelected without traverse in Paper No. 4. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Prior Art Rejections

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 7-9, 17-21, 23, 24 and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Admitted Prior Art (AAPA) in view of Raina et al 6,211,608 (Raina) , Jones et al 5,534,743 (Jones '743) and Jones et al 6,069,443 (Jones '443). The admitted prior art, as disclosed in figure 1 and pages 1-4 comprises forming a metal conductive structure (cathode strips 14) on a substrate, forming a restrictive layer 15 covering the tops and sides of the conductive structure, forming conical micropoint emitters 18 in contact with the conductive structure, thereafter depositing a dielectric layer and a grid conductor layer over the micropoints and substrate, and using a photolithographic step to form openings in the gate and dielectric layer to expose the micropoint emitters and to form the dielectric and grid structures

spaced from the micropoints. AAPA differs from the claimed invention in that a separately deposited insulator layer is disposed between the resistive layer and dielectric structure. Raina discloses that the resistive layer tends to have pin holes causing shorts to develop. Therefore, Raina, column 5, lines 47-54, teaches the formation of a buffer layer insulator to substantially eliminate the possibility of short circuiting via the resistive layer. It was also known in the art that pin hole defects in insulative layers can also cause shorts and that the problem of short circuiting can also be overcomed by providing the insulative layer in the form of multiple layers. Thus Jones '743, column 6, lines 48-56 and Jones '443, column 5, lines 26-33 discloses that the purpose of the multiple layers of insulation 22-24 or 13 was to prevent short circuiting due to pin hole defects. For the same reason, it would have been obvious to one of ordinary skill in the art at the time of applicants' invention to provide a buffer like insulative layer over the resistive layer prior to depositing the layer that forms the dielectric structure of AAPA since pin holes or other short circuit defects could occur in either the resistive layer or the dielective layer. Thus claims 1, 9, 17, 24 and 26 are clearly unpatentable.

As to claims 2, 3, 18, 19 and 27-29, Raina, column 6, lines 15-17, discloses that aluminum could be used for the conductive structure. Since aluminum is well known for its excellent conductivity, it would have been obvious for one of ordinary skill in the art to employ aluminum as the conductive structure of AAPA. To further select a thickness of the conductor based upon the current carrying requirements of the device and known properties of the conductor (claim 29) would have been obvious to one of ordinary skill in the art since the same involves routine production start up procedure as per common

case law. As to claims 4-5, 20-21, and 30, the patents to Jones and Raina each disclose that silicon oxide is a well known insulator. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention to employ silicon oxide as the insulator of AAPA since it is a standard material for the insulator of field emission devices. As to claim 8, Raina would have suggested the use of soda-lime glass for the cathode substrate since soda-lime glass is cheap. Also to use glass would have been obvious since transparent glass is generally used for the face plate and to make the back plate and face plate of the same material provides for less stress on the device due to differential thermal exansion. As to claim 23, see column 6, lines 34-38 for the thickness of the layer provided to block short circuiting due to pin hole defects in the resistive layer.

Claims 6, 22 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Admitted Prior Art (AAPA) in view of Raina , Jones '743 and Jones '443 as above applied to claims 5, 21 and 30 further in view of Haung 5,578,896. Haung further discloses that both silicon oxide and silicon nitride are standard materials for the insulative layer of a field emission display. Further, Jones '743, columns 7 and 9, step 8, teaches the deposition of silicon nitride over the resistive layer. Therefore, it would have been obvious for one of ordinary skill in the art to substitute silicon nitride for the insulator of AAPA adjacent the resistive layer and silicon dioxide for the dielectric structure, since alternate layers of different materials are suggested for the dielectric of Jones '743.

Response to Arguments

Applicant's arguments filed September 12, 2003 have been fully considered but they are not persuasive. Raina discloses the use of a buffer layer between the resistor layer and the cathode layer to reduce the possibility of pinhole defects that might cause a short circuit between the cathode electrode and gate electrode. By providing multiple layers the possibility that pinhole defects might line up to cause a short circuit is minimized. The order of the layers is immaterial so long as the net effect is to electrically isolate the cathode electrode from the gate electrode. Thus applicants' argument that to provide the buffer layer over rather than under the resistor layer would not function to reduce short circuits between the cathode and gate electrodes is not well taken. However, the argument is immaterial since the examiner proposes to provide a buffering insulator layer over the resistor layer in addition to not in lieu of the layer 58 of Raina. As shown by Jones, other short circuiting between the gate and cathode can be due to pinhole defects in the insulator 66 of Raina. Therefore it would have been obvious to one of ordinary skill in the art to provide a buffer layer of insulation to reduce the chance that pinhole defects in the insulation layer 66 could cause short circuiting.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Ramsey whose telephone number is 308-2324. The examiner can normally be reached on M-F from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.

Kenneth J. Ramsey
Primary Examiner
Art Unit 2879

kjr
October 21, 2003